From:	Sanders, LaTonya
To:	R6HarveyInfo
Cc:	Houston, Pamela; Flores-Gregg, Paula
Subject:	FW: EPA Outreach and Educational Material re: Hurricane Harvey Response
Date:	Tuesday, September 12, 2017 4:59:37 PM
Attachments:	EPA--Flood Cleanups Avoiding Indoor Air Quality Problems.pdf EPA--Mold Homeowners and Renters Guide to Cleanup after Disasters.pdf EPA--Mold in Schools Fact Sheet.pdf EPA--Post-Disaster Renovations & Lead-based Paint.pdf EPA--Private Wells--What to do After the Flood.pdf EPA--Septic Systems--What to do After the Flood.pdf flood_cleanup_and_the_air_in_your_home._poster.pdf Hurricane Flyer4_9.6.17.pdf

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From: Sanders, LaTonya
Sent: Tuesday, September 12, 2017 4:48 PM
To: 'rconlin@co.jefferson.tx.us'
Subject: EPA Outreach and Educational Material re: Hurricane Harvey Response

Hi Ronda,

Thanks for taking the time to speak with me.

I look forward to meeting with you next week to discuss assistance I can provide to you.

As an EPA Community Liaison, I am working in Port Arthur/Beaumont to educate and disseminate information that is useful to individuals, communities and local governments about floodwater safety, entry back into home, drinking water and other health and environmental considerations relating to Hurricane Harvey.

Attached is outreach and educational material that you may consider adding to your website, Facebook, Twitter or print for distribution.

Thanks, again.

LaTonya Sanders
913-551-7555
Sanders.latonya@epa.gov

United States
Environmental Protection
Office of Air and Radiation

Revised November 2012

Flood Cleanup: Avoiding Indoor Air Quality Problems

Fact Sheet

Introduction

During a flood cleanup, the indoor air quality in your home or office may appear to be the least of your problems. However, failure to remove contaminated materials and to reduce moisture and humidity can present serious long-term health risks. Standing water and wet materials are a breeding ground for microorganisms, such as viruses, bacteria, and mold. They can cause disease, trigger allergic reactions, and continue to damage materials long after the flood.

This fact sheet discusses problems caused by microbial growth, as well as other potential effects of flooding, on long-term indoor air quality and the steps you can take to lessen these effects. Although the information contained here emphasizes residential flood cleanup, it is also applicable to other types of buildings.

Prepare for Cleanup

Read ***Repairing Your Flooded Home*** prepared by the Federal Emergency Management Agency and the American Red Cross. The booklet discusses flood safety issues and can save your life. The booklet also contains detailed information on proper methods for cleaning up your home. You should also consult the wealth of information on the FEMA, CDC, and The American Lung Association sites on the subject, which are listed below:

- FEMA website on floods/flooding - www.fema.gov/hazards/floods
- The American Red Cross – www.redcross.org
- American Lung Association's Fact Sheet on Flood Clean-up www.lungusa.org/air/flood_factsheet99.html

This fact sheet provides additional information not covered in the original FEMA/American Red Cross booklet on indoor air quality concerns related to flooding (however, because this fact sheet was prepared in 1993, it is more than likely that FEMA and the Red Cross and the American Lung Association do have more up-to-date information and resources available which you should consult). Many of the methods used for general cleanup, as detailed in the booklet, are the same as those used to avoid problems with indoor air quality. For brevity, we have not provided detail on the general methods used for cleanup here. This fact sheet is intended to be used in conjunction with the FEMA/American Red Cross booklet and resources.

Children are different from adults. They may be more vulnerable to chemicals and organisms they are exposed to in the environment.

Avoid Problems from Microbial Growth

Remove Standing Water

Standing water is a breeding ground for microorganisms, which can become airborne and be inhaled. Where floodwater contains sewage or decaying animal carcasses, infectious disease is of concern. Even when flooding is due to rainwater, the growth of microorganisms can cause allergic reactions in sensitive individuals. For these health reasons, and to lessen structural damage, all standing water should be removed as quickly as possible.

Dry Out Your Home

Excess moisture in the home is an indoor air quality concern for three reasons:

- Microorganisms brought into the home during flooding may present a health hazard. These organisms can penetrate deep into soaked, porous materials and later be released into air or water. Coming in contact with air or water that contains these organisms can make you sick.
- High humidity and moist materials provide ideal environments for the excessive growth of microorganisms that are always present in the home. This may result in additional health concerns such as allergic reactions.
- Long-term increases in humidity in the home can also foster the growth of dust mites. Dust mites are a major cause of allergic reactions and asthma.

See **Step 4, Dry Out Your Home**, of the American Red Cross/FEMA booklet, ***Repairing Your Flooded Home,*** on steps that should be taken to open up and dry out ceilings, walls, and floors in the home.

Be patient. The drying out process could take several weeks, and growth of microorganisms will continue as long as humidity is high. If the house is not dried out properly, a musty odor, signifying growth of microorganisms can remain long after the flood.

Remove Wet Materials

It can be difficult to throw away items in a home, particularly those with sentimental value. However, keeping certain items that were soaked by water may be unhealthy. Some materials tend to absorb and keep water more than others. In general, materials that are wet and cannot be thoroughly cleaned and dried within 24-48 hours should be discarded, as they can remain a source of microbial growth.

Information on the types of water-damaged materials that should be discarded are provided in Step 4, Dry Out Your Home, of the American Red Cross/FEMA booklet, *Repairing Your Flooded Home*

The booklet suggests that you may be able to dry out and save certain building materials (for example, wallboard, fiberglass insulation, and wall-to-wall carpeting that were soaked only with clean rainwater). You may, however, want to consider removing and replacing them to avoid indoor air quality problems. Because they take a long time to dry, they may be a source of microbial growth. For information on mold prevention and cleanup, visit www.epa.gov/mold.

In addition, fiberboard, fibrous insulation, and disposable filters should be replaced, if they are present in your heating and air conditioning system and have contacted water. (If a filter was designed to be cleaned with water and was in contact with clean rainwater only, ensure that it is thoroughly cleaned before reinstalling.)

Avoid Problems from the Use of Cleaners and Disinfectants

The cleanup process involves thorough washing and disinfecting of the walls, floors, closets, shelves, and contents of the house. In most cases, common household cleaning products and disinfectants are used for this task. FEMA also suggests the use of disinfectants and sanitizers on the ductwork for the heating and air conditioning system, if it has been flooded.

Disinfectants and sanitizers contain toxic substances. The ability of chemicals in other household products used for cleaning to cause health effects varies greatly, from those with no known health effect to those that are highly toxic. Read and follow label instructions carefully, and provide fresh air by opening windows and doors. If it is safe for you to use electricity and the home is dry, use fans both during and after the use of disinfecting, cleaning, and sanitizing products.

Be careful about mixing household cleaners and disinfectants together. Check labels for cautions on this. Mixing certain types of products can produce toxic fumes and result in injury and even death.

Avoid Carbon Monoxide Poisoning

Carbon monoxide (CO) is a colorless, odorless gas that can be lethal at high levels. Carbon monoxide levels can build up rapidly if certain types of combustion devices (for example, gasoline-powered generators, camp stoves and lanterns, or charcoal-burning devices) are used indoors. Do not use combustion devices designed for outdoor use indoors.

Avoid Problems from Airborne Asbestos and Lead Dust

Elevated concentrations of airborne asbestos can occur if asbestos-containing materials present in the home are disturbed. Airborne asbestos can cause lung cancer and mesothelioma, a cancer of the chest and abdominal linings. If you know or suspect that your home contains asbestos, contact the EPA TSCA Assistance Information Service at (202) 554-1404 for information on steps you should take to avoid exposure.

Lead is a highly toxic metal which produces a range of adverse health effects, particularly in young children. Disturbance or removal of materials containing lead-based paint may result in elevated concentration of lead dust in the air. If you know or suspect that your home contains lead-based paint, contact the National Lead Information Center to receive a general information packet, to order other documents, or for detailed information or questions. Call and speak with a specialist Monday through Friday, 8:00 am to 6:00 pm eastern time (except Federal holidays) at 1 (800) 424-LEAD [5323].

Additional Information

EPA's website on natural disasters: Flooding - www.epa.gov/naturaldisasters/flooding.html

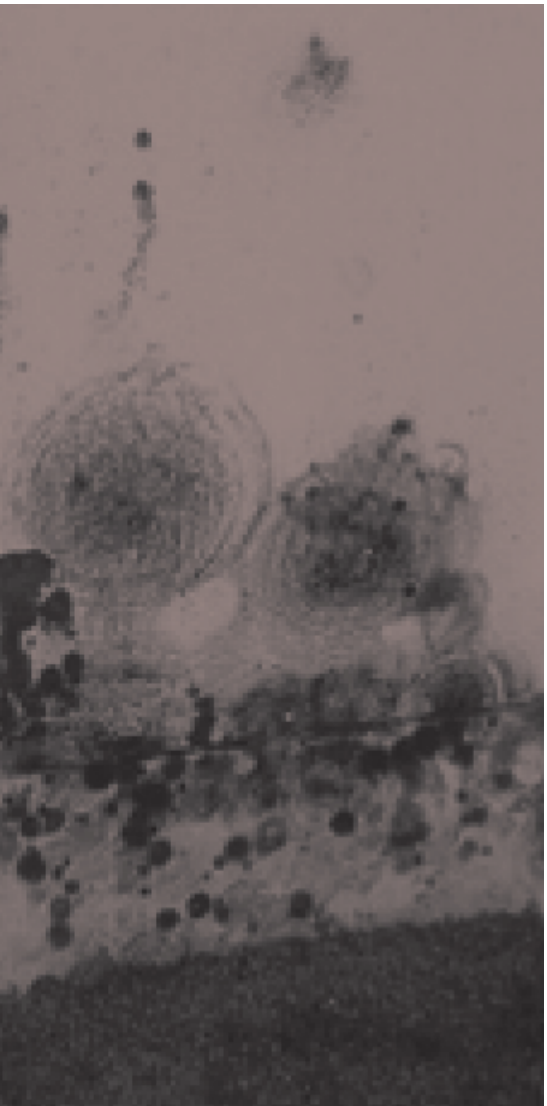
The Federal Emergency Management Agency's Flood website - www.fema.gov/hazards/floods/
Publications are available from:

FEMA – www.fema.gov
Jessup, MD 20794-2012
Phone: 800-480-2520/Fax: 301-362-5335

American Lung Association's Fact Sheet on Flood Clean-up - www.lungusa.org/air/flood_factsheet99.html

Centers for Disease Control (CDC) **Key Facts About Hurricane Recovery** - www.bt.cdc.gov/hurricanes/index.asp

HOMEOWNER'S AND RENTER'S GUIDE TO MOLD CLEANUP AFTER DISASTERS



Cleaning up after a flood can pose health risks. You and your family should wait to re-enter your home until professionals tell you it is safe, with no structural, electrical or other hazards.

Before you start cleanup activities, contact your insurance company and take pictures of the home and your belongings. Remember – drying your home and removing water-damaged items is your most important step for preventing mold damage.

IS THERE A PROBLEM?

Was your home flooded? If so, and you were not able to dry your home (including furniture and other items) within 24-48 hours, you should assume you have mold growth. You need to *completely* dry everything, clean up the mold, and make sure you don't still have a moisture problem.

You may see or smell mold on clothing, drywall, furniture, cardboard boxes, or books, but it may also be hidden under or behind items like carpet, cushions, or walls.

MOLD BASICS: HOW MOLDS CAN AFFECT YOUR HEALTH

Exposure to mold can lead to asthma attacks, eye and skin irritation, and allergic reactions. It can lead to severe infections in people with weakened immune systems. Avoid contaminated buildings and contaminated water as much as you can.

Flood water may have carried sewage or chemicals into your home. This could expose you or your family to viruses, bacteria, disease carriers (such as mosquitos), and parasites, as well as mold. To learn more about cleaning and disinfection go to: http://www.cdc.gov/healthywater/emergency/flood/standing.html

KEY MESSAGES

- Wear personal protective equipment. Wear an N-95 respirator at a minimum, goggles, and protective gloves.
- Use portable generators carefully, outside and away from the home, to avoid carbon monoxide poisoning and fires.
- Ensure the mold cleanup is complete before reoccupying your home.

You can protect yourself and your family from mold exposure by following these steps.

BEFORE YOU ENTER ANY MOLDY SITE:

- **Protect yourself and loved ones against hazards.** People with breathing problems like asthma or who have weakened immune systems should stay away from moldy sites. Children should not take part in disaster cleanup work. Check for loose power lines or gas leaks. Make sure the electricity and gas are turned off. Look for sagging ceilings or floors or other structural problems. Watch out for wet, muddy, or slippery floors.
- **Protect your mouth and nose** against breathing in mold: wear at least an N-95 respirator. If you plan to spend a lot of time removing moldy belongings or doing work like ripping out moldy drywall, wear a half-face or full-face respirator. Basic information on using it is in OSHA's general respiratory protection guidance.
- **Protect your skin.** Wear protective gloves (non-latex, vinyl, nitrile, or rubber). Do not touch mold or moldy items with bare hands.
- **Protect your eyes.** Wear goggles that provide *complete* eye protection. Choose goggles designed to keep out dust and small particles. Safety glasses or goggles that have open vent holes will not protect you against dust and small particles.

AFTER YOU LEAVE A MOLD SITE:

- **Protect yourself and loved ones**. Shower and change your clothes. This will help you avoid carrying mold and other hazards back to your current living quarters.

SHOULD I DO THIS MYSELF?

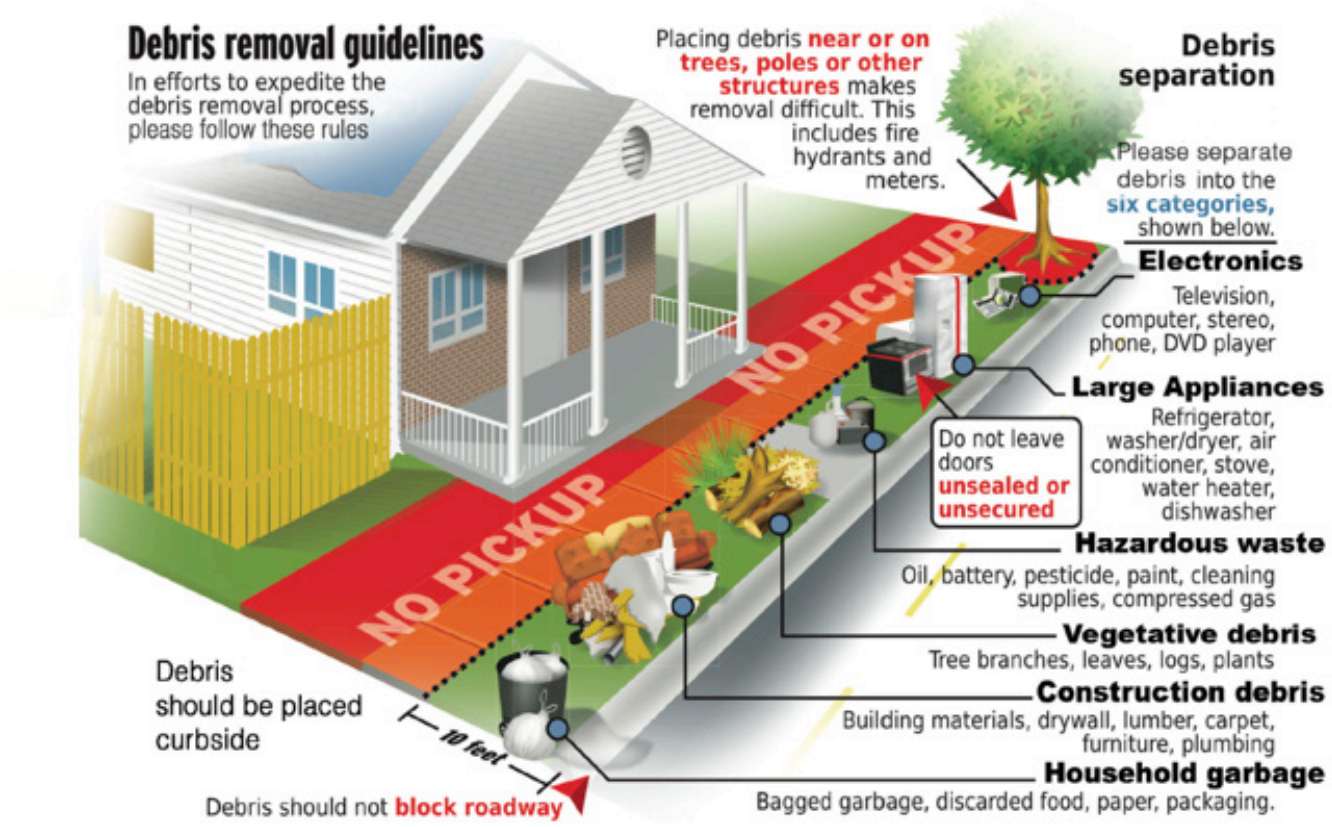
This job may be too difficult or dangerous for you. It may be best to get help from experienced and qualified professionals if you can. Hire a mold inspection or remediation professional affiliated with or certified by the National Environmental Health Association (NEHA), the American Industrial Hygiene Association (AIHA), the Institute of Inspection, Cleaning and Restoration Certification (IICRC), or American Council for Accredited Certification (ACAC) to inspect, repair, and restore the damaged parts of your home. Your state also may regulate mold remediation.

Sampling for mold is not usually recommended. Understanding the results can be difficult, and no matter what kind of mold is in your home, you need to clean it up and fix the moisture problem.

IF I MUST DO THIS MYSELF, HOW CAN I DO IT SAFELY?

Follow these steps:

1. Put on the personal protective equipment described above to protect your eyes, nose, mouth, and skin.
2. Remove standing water and wet materials. Use a wet vacuum to remove water from floors, carpets, and hard surfaces. Dry your home and everything in it as quickly as you can – within 24 to 48 hours if you can.
3. Open all doors and windows when you are working and leave as many open as is safe when you leave.
   - Open inside doors, especially closets and interior rooms, to let air flow to all areas. Take doors off their hinges if you need to.
   - Open kitchen cabinets and bathroom vanity doors; remove drawers, wipe them clean, and stack them to dry.
   - Open the attic access to let air flow to the attic. Before you open the attic door, make sure nothing will fall on you.
4. When electricity is safe to use, use fans and dehumidifiers to remove moisture. Do not use fans if mold has already started to grow, because the fans may spread the mold.
5. Clean with water and a detergent. Remove all mold you can see. Dry right away.
6. If you use cleaning products, do not mix cleaning products together. DO NOT mix bleach and ammonia because it can create toxic vapors.
7. Painting or caulking over mold will not prevent mold from growing. Fix the water problem completely and clean up all the mold before you paint or caulk.
8. Throw away items that can't be cleaned and dried. Throw away anything that was wet with flood water and can't be cleaned and dried completely within 24 to 48 hours. If you have precious items that you want to preserve, follow these guidelines from the Smithsonian Institute: http://www.si.edu/mci/english/learn_more/taking_care/mnm.html



SAFETY TIPS ON USING PORTABLE GENERATORS

If you use a portable generator for electricity use CAUTION to avoid carbon monoxide poisoning and fires.

- Use portable generators OUTSIDE and at least 20 feet away from buildings.
- Do not use portable generators inside your house or garage.
- Do not put portable generators on balconies or near doors, vents, or windows.
- Do not use portable generators near where you or your children are sleeping.
- Never refuel a generator while it is hot.
- For more information, go to: http://www.osha.gov/OshDoc/data_Hurricane_Facts/portable_generator_safety.pdf

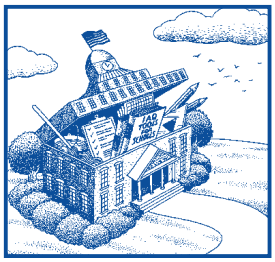
AM I DONE?

- If you still see or smell mold, you have more work to do. After a remediation, there should be no signs of water damage or mold growth.
- You may need to ask a mold remediation professional to know whether your mold problem is completely fixed. As noted in the "Should I do this myself?" section, sampling for mold is not usually recommended; instead, a careful inspection of the work area for completion of the cleanup and absence of mold-related odors is usually appropriate.
- If you have health problems that get worse when you return home, like asthma or allergy attacks or skin or eye irritation, you may still have some mold.

LOCAL CONTACT INFO:

United States Environmental Protection Agency
Indoor Environments Division (6609J)

Indoor Air Quality



Tools for Schools

Fact Sheet: MOLD IN SCHOOLS

When mold grows in school buildings and portable classrooms, some staff and students, particularly those with allergies or respiratory problems, may report adverse health effects.

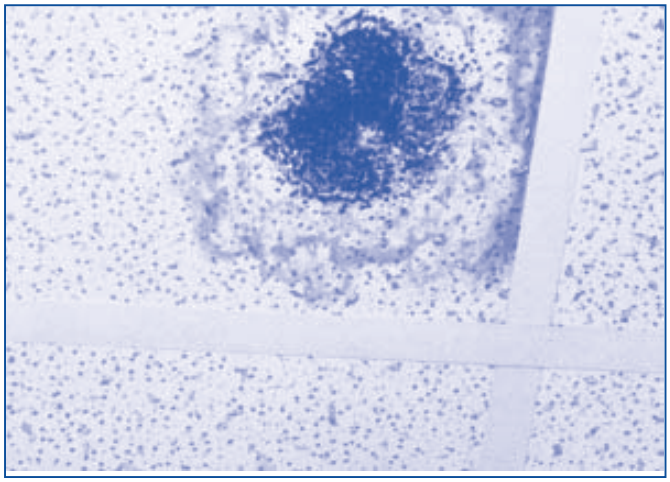
Mold requires oxygen, water, and a source of food to grow. There are molds that can grow on almost anything including: wood, paper, carpet, foods, and insulation. Controlling moisture is the key to managing mold in schools.

Why is Mold Growing in Your School?

- Mold grows in schools when airborne mold spores land on a damp "food source" and begin digesting it in order to survive.
- The water required for mold growth can enter school buildings and portable classrooms through leaky roofs, pipes, windows, foundations, and other structural openings. Water may also enter schools due to floods, poor drainage, or mis-directed sprinklers.
- Moisture problems in schools can result from scheduled maintenance activities or conditions during school breaks such as:
  - Increased moisture due to painting or carpet cleaning;
  - High humidity during the summer; and
  - No air conditioning or heating system operation (or reduced use) when school is not in session.
- When moisture enters the building and its interior structure, it can condense as it comes into contact with cooler indoor surfaces, such as windows, walls, and water pipes.

Where Does Mold Grow in Schools?

- Mold growth often results from excess moisture or water build-up in the following areas:



Photos above: mold growing on the surface of a unit ventilator and a ceiling tile.

  - On roof materials above ceilings;
  - Around windows;
  - Near water fountains;
  - On walls, ceiling tiles, and other visible surfaces;
  - On hidden surfaces, such as the back side of dry wall or wall coverings;
  - Around bathroom tiles;
  - In cooling coil drip pans and inside ductwork; and
  - In books and carpet.

Indoor Air Quality

Tools for Schools

What Health Effects are Associated with Mold?

- Potential health effects associated with mold exposure may include irritation of the eyes, skin, nose, throat, and lungs of both mold allergic and non-allergic people.
- In sensitive individuals allergic reactions can be caused by breathing in or touching mold.
- Dead mold may still cause allergic reactions in some people, so it is not enough to simply kill the mold and leave it there, the mold must be removed.

How Can You Manage Mold in Schools?

- The key to controlling indoor mold growth in schools is to control moisture.
- Conduct maintenance as scheduled and perform regular school building inspections for signs of mold, moisture, and leaks.
- Report all water leaks and moisture problems immediately to your maintenance staff.
- Clean and dry damp or wet building materials and furnishings within 24–48 hours after a leak or spill to prevent mold growth.
- Keep indoor relative humidity between 30% and 50%:
  - Ventilate bathrooms, locker rooms, and other moisture-generating sources to the outside.
  - Use air conditioners and dehumidifiers.
- Scrub mold off hard surfaces with water and detergent, and dry completely.
- Remove and replace porous materials, such as ceiling tiles or carpet, that become moldy.
- Avoid installing carpet in areas with perpetual moisture problems:
  - Near drinking fountains and classroom sinks.
  - On concrete floors in contact with the ground and subject to frequent condensation.

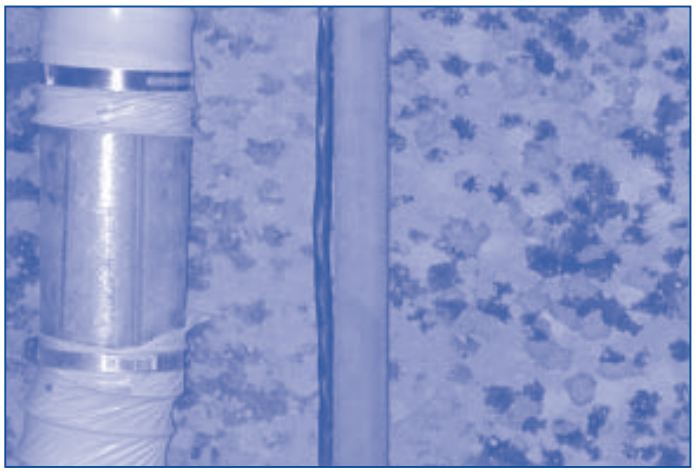


photo by Daniel Friedman

Photo above: mold growing on backside of wallboard.

- Cover cold surfaces, such as cold water pipes, with insulation.
- Ensure that the school operates exhaust systems, such as bathroom fans, together with air conditioning or heating systems.
- Establish policies that restrict moisture generating activities, such as carpet cleaning, during vacation unless moisture removing equipment is operating. Consider cycling the air conditioning system several hours every day or running portable dehumidifiers.
- Participate in U.S. EPA's *IAQ Tools for Schools* Program. This program provides guidance on good maintenance practices that help prevent mold growth and other IAQ problems.

Additional Resources

You can find more information on mold-related issues and moisture prevention in the following EPA documents:

- *Mold Remediation in Schools and Commercial Buildings*
  www.epa.gov/mold/mold_remediation.html
- *A Brief Guide to Mold, Moisture and Your Home*
  www.epa.gov/mold/moldguide.html
- *the IAQ Tools for Schools Action Kit*
  www.epa.gov/iaq/schools/actionkit.html
- *Managing Asthma in the School Environment*
  www.epa.gov/iaq/schools/asthma.html

United States Environmental Protection Agency
Office of Chemical Safety and Pollution Prevention (7404T)
EPA-740-F-11-001
September 2011
FACT SHEET

Post-Disaster Renovations and Lead-Based Paint

What is EPA's Renovation, Repair and Painting (RRP) Rule?
Contractors performing renovation, repair and painting projects that disturb more than six square feet of painted surfaces in homes and child-occupied facilities (including day care centers and schools) built before 1978 must, among other things, be certified and follow lead-safe work practices. Federal law requires that individuals receive certain information, such as EPA's *Renovate Right* brochure, before starting work.

Natural disasters, such as tornadoes, hurricanes, earthquakes or floods, often result in the need for renovations to damaged homes and other structures. When common renovation activities like sanding, cutting, and demolition occur in structures that contain lead-based paint, such activities create lead-based paint hazards, including lead-contaminated dust. Lead-based paint hazards are harmful to both adults and children, but particularly pregnant women and children under age six.

To protect against health risks, EPA's Renovation, Repair and Painting (RRP) Rule is designed to minimize exposure to lead-based paint hazards. Under this Rule, contractors performing renovation, repair and painting projects that disturb painted surfaces in homes and child-occupied facilities (including day care centers and schools), built before 1978, must, among other things, be certified and follow lead-safe work practices. For complete information about the RRP Rule and its requirements, go to: www.epa.gov/lead/pubs/renovation.htm#requirements.

To ensure that property owners and occupants are able to act quickly to preserve their homes and property in the wake of disasters, the RRP Rule includes an emergency provision exempting firms from certain requirements. See 40 CFR 745.82(b). Emergency renovations are defined as renovation activities that were not planned but result from a sudden, unexpected event that, if not immediately attended to, present a safety or public health hazard, or threaten equipment and/or property with significant damage. See the RRP Frequent Questions (FQ), #23002-32367, available at: http://toxics.supportportal.com/ics/support/splash.asp?deptID=23019.

Under the emergency provision of the RRP Rule, contractors performing activities that are immediately necessary to protect personal property and public health need not be RRP trained or certified and are exempt from the following RRP Rule requirements: information distribution, posting warning signs at the renovation site, containment of dust, and waste handling. Firms are NOT exempt from the RRP Rule's requirements related to cleaning, cleaning verification, and recordkeeping. Further, the exemption applies only to the extent necessary to respond to the emergency. Once the portion of the renovation that addresses the source of the emergency is completed, the remaining activities are subject to all requirements of the RRP Rule.

United States Environmental Protection Agency
Office of Chemical Safety and Pollution Prevention (7404T)
EPA-740-F-11-001
September 2011
FACT SHEET

How do I find a list of certified renovation firms in my area?

To search an online directory of certified renovation firms, go to www.epa.gov/getleadsafe.

You can also contact the National Lead Information Center, 1-800-424-LEAD (5323).

What if I have a question about the RRP Rule that is not answered in this fact sheet?

Call the National Lead Information Center at 1-800-424-LEAD (5323).

My home has been severely damaged and will require extensive renovations. Does the RRP Rule apply?

The RRP Rule does not apply to an activity that demolishes and rebuilds a structure to a point where it is effectively new construction. Thus, in pre-1978 homes and child-occupied facilities where all interior and exterior painted surfaces (including windows) are removed and replaced, the provisions of the RRP Rule would not apply. Activities involving the removal and replacement of only some interior and exterior painted surfaces would still be covered under the RRP Rule. For more information, see the Frequent Questions (FQs 23002-18426 and 23002-23415) on our website at: http://epa.gov/lead/pubs/rrp-faq.pdf.

IMPORTANT NOTICE TO HOMEOWNERS

If you hire a contractor to perform renovation work on your pre-1978 home, you should be aware that, generally, your hired professional must be RRP-certified and observe the requirements of the RRP Rule. However, if the circumstances necessitate an emergency renovation as defined above, the professional need not comply with certain requirements of the RRP Rule as described earlier — but only to the extent necessary to respond to the emergency.

The RRP Rule **does not impose requirements on a homeowner performing work on an owner-occupied residence.** However, EPA encourages homeowners to hire certified professionals that have received required training on lead-safe work practices to prevent lead contamination. Homeowners that choose to perform renovation work themselves should take steps to contain the work area, minimize dust and clean up thoroughly. To learn how to perform renovation work safely, contact the National Lead Information Center, 1-800-424-LEAD (5323).

What steps should homeowners take to protect themselves and their families from exposure to lead dust if they plan on doing their own renovations?

- Contain the work area so that dust does not escape from the area. Cover floors and furniture that cannot be moved with heavy-duty plastic and tape, and seal off doors and heating and cooling system vents.
- Keep children, pregnant women, and pets out of the work area at all times.
- Minimize dust during the project by using techniques that generate less dust, such as wet sanding or scraping, or using sanders or grinders that have HEPA vacuum attachments which capture the dust that is generated.
- Clean up thoroughly by using a HEPA vacuum and wet wiping to clean up dust and debris on surfaces. Mop floors with plenty of rinse water before removing plastic from doors, windows, and vents.

United States Environmental Protection Agency

What to Do After the Flood

Drilled, driven or bored wells are best disinfected by a well or pump contractor, because it is difficult for the private owner to thoroughly disinfect these wells.

If you suspect that your well may be contaminated, contact your local or state health department or agriculture extension agent for specific advice on disinfecting your well. The suggestions below are intended to supplement flood precautions issued by State and local health authorities.

WARNING!
DO NOT TURN ON THE PUMP
There is danger of electrical shock and damage to your well or pump if they have been flooded

WARNING!
DO NOT WASH WITH WELL WATER
People drinking or washing with water from a private well that has been flooded will risk getting sick.

Well and Pump Inspection

Flood Conditions at the Well - Swiftly moving flood water can carry large debris that could loosen well hardware, dislodge well construction materials or distort casing. Coarse sediment in the flood waters could erode pump components. If the well is not tightly capped, sediment and flood water could enter the well and contaminate it. Wells that are more than 10 years old or less than 50 feet deep are likely to be contaminated, even if there is no apparent damage. Floods may cause some wells to collapse.

Electrical System - After flood waters have receded and the pump and electrical system have dried, do not turn on the equipment until the wiring system has been checked by a qualified electrician, well contractor, or pump contractor. If the pump's control box was submerged during the flood all electrical components must be dry before electrical service can be restored. Get assistance in turning the pump on from a well or pump contractor.

Pump Operation - All pumps and their electrical components can be damaged by sediment and flood water. The pump including the valves and gears will need to be cleaned of silt and sand. If pumps are not cleaned and properly lubricated they can burn out. Get assistance from a well or pump contractor who will be able to clean, repair or maintain different types of pumps.

Emergency Disinfection of Wells that have been Flooded

Before Disinfection: Check the condition of your well. Make sure there is no exposed or damaged wiring. If you notice any damage, call a professional before the disinfection process.

Materials Needed:

- One gallon of non-scented household liquid bleach;
- rubber gloves;
- eye protection;
- old clothes; and
- a funnel.

Step 1

If your water is muddy or cloudy, run the water from an outside spigot with a hose attached until the water becomes clear and free of sediments.

Step 2

Determine what type of well you have and how to pour the bleach into the well. Some wells have a sanitary seal with either an air vent or a plug that can be removed (a). If it is a bored or dug well, the entire cover can be lifted off to provide a space for pouring the bleach into the well (b).

Step 3

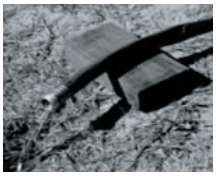
Take the gallon of bleach and funnel (if needed) and carefully pour the bleach down into the well casing.

Step 4

After the bleach has been added, run water from an outside hose into the well casing until you smell chlorine coming from the hose. Then turn off the outside hose.

Step 5

Turn on all cold water faucets, inside and outside of house, until the chlorine odor is detected in each faucet, then shut them all off. If you have a water treatment system, switch it to bypass before turning on the indoor faucets.



Step 6

Wait 6 to 24 hours before turning the faucets back on. It is important not to drink, cook, bathe or wash with this water during the time period --- it contains high amounts of chlorine.

Step 7

Once the waiting period is up, turn on an outside spigot with hose attached and run the water into a safe area where it will not disturb plants, lakes, streams or septic tanks. Run the water until there is no longer a chlorine odor. Turn the water off.

Step 8

The system should now be disinfected, and you can now use the water.

Step 9

Have your water tested for bacteria 7 to 10 days after disinfection.

Sampling and Testing the Well Water

Contact the local health department to have well water sampled and tested for contamination. Or, call your state laboratory certification officer to find a certified lab near you. You can get this number from the Safe Drinking Water Hotline (1-800-426-4791).

If the health department issues sterile bottles for the private well owner to collect water samples, follow all instructions for the use of these bottles.

After the pump is back in operation, the health department should sample and test the water at regular intervals.

CAUTION: Because of the extensive flood area and the speed and direction of ground water flow, your well may not be a safe source of water for many months after the flood. The well can become contaminated with bacteria or other contaminants. Waste water from malfunctioning septic tanks or chemicals seeping into the ground can contaminate the ground water even after the water was tested and found to be safe. It will be necessary to take long range precautions, including repeated testing, to protect the safety of drinking water.

CONCERNS AND ADVISORIES

If in doubt about the well water supply, follow health department drinking and bathing advisories.

Remember that there is a danger of electrical shock from any electrical device that has been flooded; consult a certified electrician. Rubber boots and gloves are not adequate protection from electric shock.

Well disinfection will not provide protection from pesticides, heavy metals and other types of non-biological contamination. If such contamination is suspected, due to the nearness of these contaminant sources, special treatment is required.

Information on home water treatment units (also called point-of-use and point-of-entry units) is available from U.S. EPA by phoning the **Safe Drinking Water Hotline (1-800-426-4791)**.

If you observe chemical containers (including barrels and drums) that have moved to your property, call your state or county health department or the **Superfund Hotline (1-800-424-9346)**.

For information on long-term water quality conditions in the area, consult the state or county health department.

Well owners may have information about the construction, or testing of their well and this information will be helpful to the health department in determining water quality conditions.

Septic systems should not be used immediately after floods. Drain fields will not work until underground water has receded. Septic lines may have broken during the flood.

Septic Systems—What to Do after the Flood

Where can I find information on my septic system?

Please contact your local health department for additional advice and assistance. For more information on onsite/decentralized wastewater systems, call the National Environmental Services Center at (800) 624-8301 or visit their website at www.nesc.wvu.edu.

Do I pump my tank during flooded or saturated drainfield conditions?

No! At best, pumping the tank is only a temporary solution. Under worst conditions, pumping it out could cause the tank to try to float out of the ground and may damage the inlet and outlet pipes. The best solution is to plug all drains in the basement and drastically reduce water use in the house.

What if my septic system has been used to dispose wastewater from my business (either a home–based or small business)?

In addition to raw sewage, small businesses may use their septic system to dispose of wastewater containing chemicals. If your septic system that receives chemicals backs up into a basement or drain field take extra precautions to prevent skin, eye and inhalation contact. The proper clean-up depends of what chemicals are found in the wastewater. Contact your State or EPA for specific clean-up information.

What do I do with my septic system after the flood?

Once floodwaters have receded, there are several things homeowners should remember:

- Do not drink well water until it is tested. Contact your local health department.
- Do not use the sewage system until water in the soil absorption field is lower than the water level around the house.
- Have your septic tank professionally inspected and serviced if you suspect damage. Signs of damage include settling or an inability to accept water. Most septic tanks are not damaged by flooding since they are below ground and completely covered. However, septic tanks and pump chambers can fill with silt and debris, and must be professionally cleaned. If the soil absorption field is clogged with silt, a new system may have to be installed.
- Only trained specialists should clean or repair septic tanks because tanks may contain dangerous gases. Contact your health department for a list of septic system contractors who work in your area.
- If sewage has backed up into the basement, clean the area and disinfect the floor. Use a chlorine solution of a half cup of chlorine bleach to each gallon of water to disinfect the area thoroughly.

- Pump the septic system as soon as possible after the flood. Be sure to pump both the tank and lift station. This will remove silt and debris that may have washed into the system. Do not pump the tank during flooded or saturated drainfield conditions. At best, pumping the tank is only a temporary solution. Under worst conditions, pumping it out could cause the tank to try to float out of the ground and may damage the inlet and outlet pipes.
- Do not compact the soil over the soil absorption field by driving or operating equipment in the area. Saturated soil is especially susceptible to compaction, which can reduce the soil absorption field's ability to treat wastewater and lead to system failure.
- Examine all electrical connections for damage before restoring electricity.
- Be sure the septic tank's manhole cover is secure and that inspection ports have not been blocked or damaged.
- Check the vegetation over your septic tank and soil absorption field. Repair erosion damage and sod or reseed areas as necessary to provide turf grass cover.

Remember: Whenever the water table is high or your sewage system is threatened by flooding there is a risk that sewage will back up into your home. The only way to prevent this backup is to relieve pressure on the system by using it less.

1. What are some suggestions offered by experts for homeowners with flooded septic systems?

2. Use common sense. If possible, don't use the system if the soil is saturated and flooded. The wastewater will not be treated and will become a source of pollution. Conserve water as much as possible while the system restores itself and the water table fails.

3. Prevent silt from entering septic systems that have pump chambers. When the pump chambers are flooded, silt has a tendency to settle in the chambers and will clog the drainfield if it is not removed.

4. Do not open the septic tank for pumping while the soil is still saturated. Mud and silt may enter the tank and end up in the drainfield. Furthermore, pumping out a tank that is in saturated soil may cause it to "pop out" of the ground. (Likewise, recently installed systems may "pop out" of the ground more readily than older systems because the soil has not had enough time to settle and compact.)

5. Do not dig into the tank or drainfield area while the soil is still wet or flooded. Try to avoid any work on or around the disposal field with heavy machinery while the soil is still wet. These activities will ruin the soil conductivity.

6. Flooding of the septic tank will have lifted the floating crust of fats and grease in the septic tank. Some of this scum may have floated and/or partially plugged the outlet tee. If the septic system backs up into the house check the tank first for outlet blockage. Clean up any floodwater in the house without dumping it into the sink or toilet and allow enough time for the water to recede. Floodwaters from the house that are passed through or pumped through the septic tank will cause higher flows through the system. This may cause solids to transfer from the septic tank to the drainfield and will cause clogging.

7. Locate any electrical or mechanical devices the system may have that could be flooded to avoid contact with them until they are dry and clean.

8. Aerobic plants, upflow filters, trickling filters, and other media filters have a tendency to clog due to mud and sediment. These systems will need to be washed and raked.

Flood water can make the air in your home unhealthy.

This is because when things get wet for more than 2 days they usually get moldy. There may also be germs and bugs in your home after a flood.

When cleaning wear

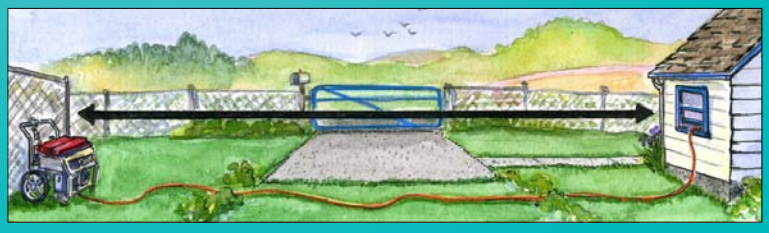
- ✓ An N-95 respirator (Hardware stores usually sell them.)
- ✓ Goggles
- ✓ Gloves
- ✓ Long pants, long-sleeved shirt, and boots or work shoes

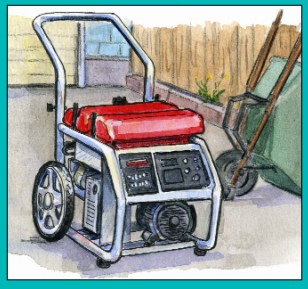
Clean and dry your house and everything in it.

Clean and dry hard surfaces. Throw away anything that was wet with flood water and can't be cleaned.

Flood Cleanup and the Air in Your Home

Use portable generators OUTSIDE and far away from the building.





Portable Generator

The exhaust, or fumes, from a portable generator could kill you in minutes if you breathe it in!

EPA

For more information contact the U.S. Environmental Protection Agency (EPA) free hotline

1-800-438-4318

or go to the EPA website

www.epa.gov/iaq/flood

EPA 402-H-07-001

Resources for You in the Aftermath of Hurricane Harvey

Our regional offices are up and running to assist you

TCEQ Customer Service and After-Hours Line: 1-888-777-3186

Texas residents can use this line to report environmental complaints or concerns. During regular business hours, calls will be routed automatically to the closest TCEQ regional office. Callers after business hours will be directed to an answering service that will get your message to the TCEQ immediately.

Los hispanohablantes pueden llamar al 1-888-777-3186.

Find TCEQ Guidance and Resources on the Web

Visit our main hurricane response webpage:
www.tceq.texas.gov//response//hurricanes

Here are some of the documents we've posted to assist you:

- Hauling hurricane-related debris to the curb in participating areas: <**go.usa.gov/xR688**>
- After the flood, is your water safe to drink? <**go.usa.gov/xR68R**>
- Disinfecting your private well: <**go.usa.gov/xR68Q**>
- How to sample your well water and understand the results: <**go.usa.gov/xR68E**>
- Status of systems in areas affected by Harvey: <**www.tceq.texas.gov/goto/harvey**>